



**SPORT AND EXERCISE SCIENCE: PAPER II**

**EXAMINATION NUMBER**

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Time: 2 hours

150 marks

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**PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY**


1. This question paper consists of 19 pages. Please check that your question paper is complete.
2. All the questions must be answered on the question paper.
3. Read the questions carefully.
4. Use the total marks awarded for each question as an indication of the detail required.
5. It is in your own interest to write legibly and to present your work neatly.

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<b>Question</b>	1	2	3	4	5	6	7	8	9	10	11	<b>Total</b>
<b>Marks</b>												

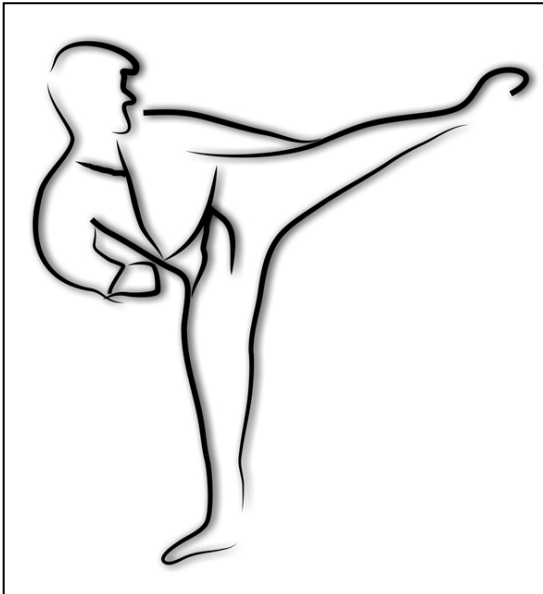
**QUESTION 1**

(a) On the following pictures (A – C) draw in:

(i) Base of Support (BoS) by using arrows 

(ii) Centre of Gravity (CoG) by using a large dot. 

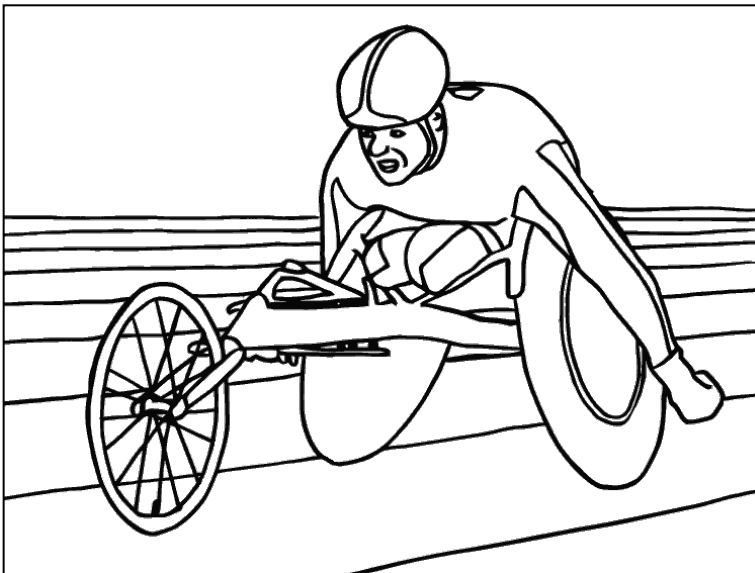
Picture A



Picture B



Picture C



(6)

(b) Correct the following statements:

- (i) The Base of Support (BoS) for the martial art athlete in Picture A is short and narrow, which provides greater stability.

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(1)

- (ii) The wheelchair athlete depicted in Picture C, is least stable as the Base of Support (BoS) is on wheels.

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(1)

- (iii) A skydiver, free-falling head-first, at  $9,8 \text{ ms}^{-1}$  towards Earth, has his Centre of Gravity (CoG) above his head.

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(1)

**[9]**

**QUESTION 2**

(a) Identify and apply **TWO** appropriate biomechanical principles to the following situations:

(i) Bracing in preparation for a tackle in rugby.

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(2)

(ii) Forward thrust of the sprinter at the finish.

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(2)

(iii) Executing a topspin forehand in tennis.

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(2)

(iv) Optimum take-off stride for maximum vertical velocity in high jump.

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(2)

(v) Most effective delivery stride when fast bowling in cricket.

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(2)

**[10]**

**QUESTION 3**

Initially, there were no limits set for the dimensions of a tennis racquet. Nowadays, racquet technology is technically advanced and must comply with the specifications set by the International Tennis Federation (ITF). These are:

- Maximum length: 74 cm
- Maximum frame width: 32 cm
- Maximum head: 870 cm<sup>2</sup>

Selecting the optimum racquet to complement playing skill level and style remains a challenge.

Refer to the table below and then answer the questions that follow:

<b>Specifications</b>	<b>Racquet 1</b>	<b>Racquet 2</b>	<b>Racquet 3</b>
Length	71 cm	74 cm	71 cm
Head size	742 cm <sup>2</sup>	870 cm <sup>2</sup>	806 cm <sup>2</sup>
Weight	340 g	280 g	225 g
Weight distribution	75% around the head	Even weight distributed throughout the racket	75% around the base

(a) Which racquet would suit a 12-year-old child? Motivate your answer.

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(4)

(b) Which racquet would suit an adult who is a recreational player and who suffers from elbow pain? Motivate your answer.

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(3)

(c) Which racquet configuration is designed for power? Motivate your answer.

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(3)

- (d) Apart from changing the shape and size of a racquet, what modification can a player make to improve swing efficiency?

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(1)

- (e) Besides the shape, size and weight of a racquet, what else will determine the power exerted by the player on the tennis ball? Provide **TWO** points.

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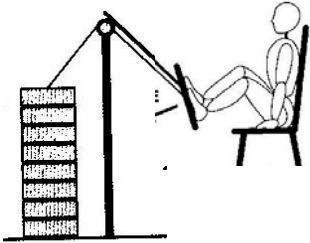


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(2)

**[13]**

**QUESTION 4**

Identify the class of lever used in each example. Motivate your selection.

Example	Class of Lever	Motivation
<p>Leg press</p> 	<p>(1)</p>	<p>(3)</p>
<p>Bicep curl</p> 	<p>(1)</p>	<p>(3)</p>
<p>Calf raises</p> 	<p>(1)</p>	<p>(3)</p>

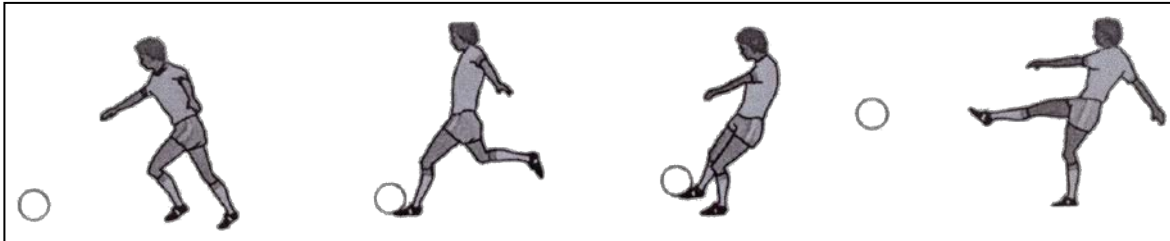
[<[http://www.bicepcurl2\\_thumb.jpg](http://www.bicepcurl2_thumb.jpg)>] (Accessed 13/2/13)  
 (Physical Education learning workbook ESA Publication 2011)  
 [<[http://www. /exercise\\_calf-raise.jpg](http://www. /exercise_calf-raise.jpg)>] (Accessed 13/2/13)

**[12]**

**QUESTION 5**

Three phases normally underlie the successful execution of sport skills: preparation, execution, follow through.

Analyse the following diagrams and in the table below, describe the technical requirements for each stage of the phase.



[<<http://www.google.co.za>>] (Accessed 20/8/2013)

Phases	Technical requirements for each stage of the phase
Preparation	Stance: (1)  Non-kicking leg: (2)  Backswing of kicking leg: (2)
Execution	Body weight: (1)  Forward swing: (1)  Strike/point of contact: (1)
Follow through	(2)





- (b) Leadership styles emerge from factors such as exposure to other leaders and one's own life experiences. List **FIVE** factors that influence leadership styles.

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(5)

- (c) The selfish pursuits of some team players may obstruct the effective functioning of the group to the extent that performance outcomes are compromised. What intervention strategies should the coach implement to channel disruptive behaviour and improve group cohesion?

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(5)

- (d) Explain how the '**storming**' phase/stage of Tuckman's Team Group Development Model should be carefully managed when facilitating an outdoor activity for a diverse group of children.

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(3)

[23]

**QUESTION 7**

- (a) 'Smartplay' is an Australian initiative that aims to reduce the incidence of sports injuries. Their motto is: *Warm Up; Drink Up and Gear up*.

In the table below explain why their motto has the potential to prevent injuries in sport.

<i>Warm up</i>		(1)
<i>Drink up</i>		(1)
<i>Gear up</i>		(1)

- (b) The new Australian campaign: *More people cycling more often*, is gaining momentum. Programmes such as: *Ride to Work* and the *Great Victorian Bike Ride* are attracting participants of all ages to cycle regularly.

- (i) Provide **TWO** strategies that could be used to increase the number of primary school children that cycle to and from schools in South Africa.

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(2)

- (ii) The Australian campaign is excellent. Nevertheless, children cycling to and from school are at risk. Traffic, state of the roads and driver attitude towards cyclists are examples of potential risks.

Explain how each of the agencies listed below could make cycling safer for children. Identify what each agency could do to ensure safe cycling conditions for children.

Agencies	Action
The town council/ municipality	(3)
The local traffic police	(3)
The school	(4)

- (c) White Water Rafting needs a comprehensive risk analysis management system (RAMS) to reduce the potential dangers inherent in this recreational pursuit.

- (i) List **THREE** potential risks facing a group of learners about to embark on a white water expedition.

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(3)

- (ii) What **FOUR** risk reduction strategies should the expedition leader apply and enforce before learners depart on the expedition?

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(4)  
[22]

**QUESTION 8**

Hamstring injuries are a common occurrence among rugby players. It is recommended that players follow a sport-specific programme including both stretching and strengthening of the hamstring muscle group, as a way to reduce recurrent injuries.

(a) Identify **ONE** specific exercise that a fitness coach would recommend to:

(i) Strengthen the hamstring muscle group.

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(1)

(ii) Stretch the hamstring muscle group.

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(1)

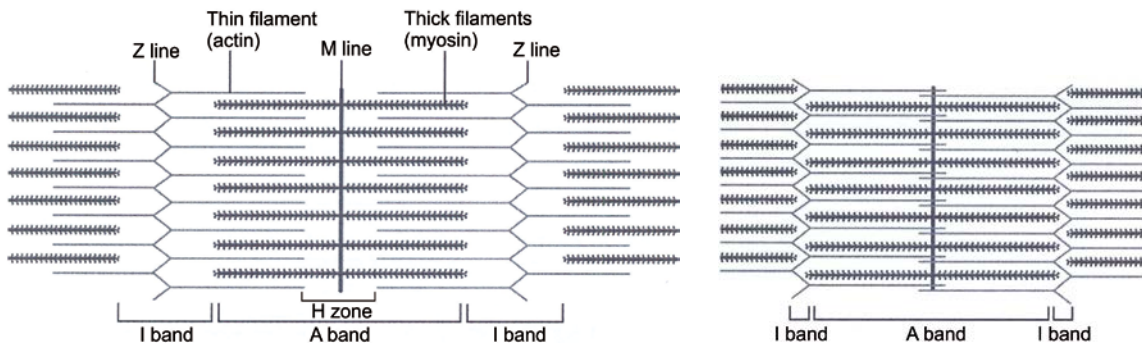
(b) The hamstring muscle group is involved in flexion of the knee joint.

(i) Name the muscle contraction occurring in the hamstring muscle group during flexion of the knee.

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(1)

(ii) Use the diagrams below to describe the processes occurring in the sarcomere as the contraction identified in (i) occurs.



[<<http://www.google.co.za>>](Accessed 20/8/2013)

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(5)  
[8]



Law 3: Contact Sport: \_\_\_\_\_

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(4)  
**[12]**







**QUESTION 11**

- (a) List **THREE** biomechanical techniques that a swimmer would apply to minimise body drag and maximise the streamlined effect in the glide phase after the dive entry or after the push off from the turn.

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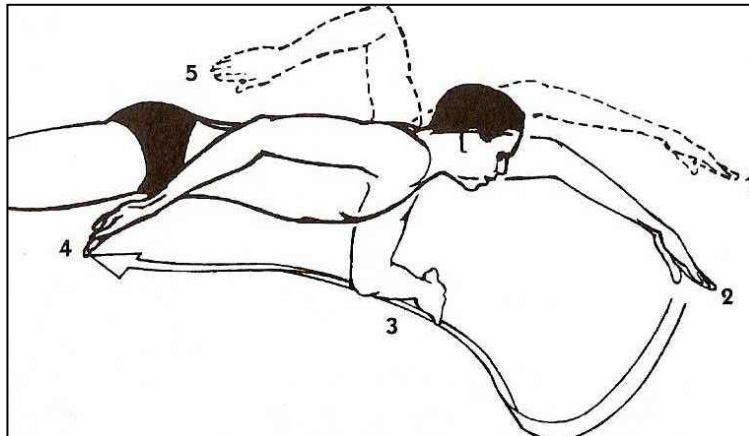
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(3)

- (b) Study the picture below showing the very specific arm and hand mechanics applied when swimming crawl/freestyle:



[<[http://www.photos/swimming/crawl.2Btechnique%](http://www.photos/swimming/crawl.2Btechnique%>)>] (Accessed 12/3/13)

- (i) Explain the reasons for the hand position and arm pull under the water following a curved, S-shaped pathway (2 – 4).

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(2)

- (ii) Explain the reasons why the hand turns sideways to exit the water after the pulling cycle (5) and spears in palm flat (1) to enter.

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(2)

[7]

**Total: 150 marks**